An Impact Study of Assimilation of COSMIC, Satellite Data and Bogus Vortex for the Simulation of Cyclone Gonu (2007)

Anisetty S K A V Prasad Rao and Ching-Yuang Huang

Department of Atmospheric Sciences, National Central University, Taiwan

Abstract

The Supper Cyclone Gonu was the one of the strongest cyclones ever formed in the Arabian Sea, northern Indian Ocean on June 2007 and caused heavy damage in Gulf of Oman and south Iran. Intense cyclones like Gonu are rare over the Arabian Sea, most of the storms in this area tend to be small and dissipate quickly. Numerous assimilation experiments are conducted using Weather Research and Forecasting (WRF) model with three dimensional variational data assimilation (3DVAR) to ingest meteorological observations from FORMOSAT-3/COSMIC, SSM/I (ocean surface wind speed and integrated water vapor), QuikSCAT, GTS and bogus vortex. The model resolutions are 45 and 15 km with outermost and inner most domains, respectively. The results show that all the simulated tracks are fairly comparable with the best track for 48 and 72 hour simulations, but only the simulated track with FORMOSAT-3/COSMIC agrees best with the observation after 48 h. Assimilation with a smaller bogus vortex improved the track compared to use of a larger bogus vortex. More details of the simulations will be discussed in this study